Rule 74.9 Stationary Internal Combustion Engines (Adopted 7/21/81, Revised 7/2/85, 9/5/89, 12/3/91, 12/21/93, 11/14/00)

A. Applicability

This rule applies to any stationary internal combustion engine rated at 50 or more horsepower, operated on any gaseous fuel, including liquid petroleum gas (LPG), or diesel fuel, and not subject to the provisions of Rule 74.16.

B. Requirements

1. After the applicable compliance date specified in either Subsection J.1 or J.2 of this rule, the owner or operator of a stationary internal combustion engine to which this rule is applicable shall limit emissions from that engine to no more than the following:

Engine Type	NOx (ppmv)	ROC (ppmv)	CO (ppmv)
Rich-burn, general	25	250	4500
Lean-burn, general	45	750	4500
Diesel	80	750	4500
Rich-burn, waste gas	50	250	4500
Lean-burn, waste gas	125	750	4500

where ppmv = parts per million by volume at 15 percent oxygen
NOx = oxides of nitrogen
ROC = reactive organic compounds
CO = carbon monoxide

All requirements are subject to adjustment as described in Subsection B.4. Compliance shall be verified annually.

2. In lieu of compliance with a NOx emission limit in Subsection B.1, engines may achieve and maintain a percent NOx reduction by volume limit specified below, as measured concurrently across an emission control device:

Rich-burn, general	96 percent
Lean-burn, general	94 percent
Diesel	90 percent

3. Prior to the applicable compliance date specified in either Subsection J.1 or J.2 of this rule, the owner or operator of a stationary internal combustion engine to which this rule is applicable shall not exceed the following emission limits:

Rich-burn engines:

a. Oxides of nitrogen: either 1) 0.3 micrograms per joule output (0.805 gm/bhp-hr), or 2) 50 ppm, or 3) a 90% reduction, as

measured either across an emission control device or relative to a baseline emission rate that has been established at the direction of the APCO.

b. Reactive organic compounds: 250 ppm.

c. Carbon monoxide: 4500 ppm.

Lean-burn engines:

a. Oxides of nitrogen: either 1) 0.9 micrograms per joule output (2.42 gm/bhp-hr), or 2) 125 ppm, or 3) an 80% reduction, as measured either across an emission control device or relative to a baseline emission rate that has been established at the direction of the APCO.

b. Reactive organic compounds: 750 ppm.

c. Carbon monoxide: 4500 ppm.

All requirements are subject to adjustment as described in Subsection B.4. Compliance shall be verified annually. There are no requirements for diesel engines.

4. Each emission limit expressed in Subsections B.1 and B.3 may be multiplied by X, where X equals the engine efficiency (E) divided by a reference efficiency of 30 percent. Engine efficiency (E) shall be determined using one of the following two methods, whichever is higher:

a. $$E = \frac{(\text{Engine output})*(100)}{\text{Energy input}}$$

where energy input is determined by a fuel measuring device accurate to ±5 percent and is based on the higher heating value (HHV) of the fuel. Percent efficiency (E) shall be averaged over 15 consecutive minutes and measured at peak load for the applicable engine.

b. $$E = \frac{(\text{Mftrs Rated Efficiency [Continuous] at LHV})*(\text{LHV})}{(\text{HHV})}$$

where LHV = the lower heating value of the fuel

Engine efficiency (E) shall not be less than 30 percent; an engine with an efficiency lower than 30 percent shall be assigned an efficiency of 30 percent for the purposes of this rule.

5. After the applicable compliance date specified in either Subsection J.1 or J.2 of this rule, no person shall allow the discharge into the atmosphere from any emission control device installed and operated pursuant to the requirements of Subsections B.1, B.2 or B.3 above, ammonia (NH_3) emissions in excess of 20 ppmv.

C. Engine Operator Inspection Plan

The operator of an engine subject to the provisions of Subsection B.1, B.2 or B.3 of this rule shall submit to the District an Engine Operator Inspection Plan. The Plan shall be approved by the Air Pollution Control Officer in writing. The plan shall be updated after any change in operation. For new engines and modifications to existing engines, the plan shall be submitted to and approved by the District prior to issuance of the Permit to Operate. The operator may request a change to the plan at any time.

The Plan shall include the following:

1. The manufacturer, model number, rated horsepower, and combustion method (i.e., rich-burn, lean-burn or diesel) of the engine.

2. A description of the NOx control system installed on the engine (if any), including type (e.g., nonselective catalyst, "clean-burn" combustion) and manufacturer, as well as a description of any ancillary equipment related to the control of emissions (e.g., automatic air/fuel ratio controller, fuel valves).

3. The company identification number and the location of the engine by a schematic of the affected facilities.

4. A specific emission inspection procedure to assure that the engine is operated in continual compliance with the provisions of this rule. The procedure shall include an inspection schedule. Inspections shall be conducted every quarter or after every 2,000 hours of engine operation. In no event shall the frequency of inspection be less than once per year.

   After an emission violation, as determined by compliance source test, the next three scheduled inspections shall include a screening analysis of the exhaust stream if a compliance source test is not required. The screening analysis shall include an examination of NOx and CO emissions.

5. Each preventative or corrective maintenance procedure or practice that will be used to maintain the engine and NOx control system in continual compliance with the provisions of this rule.

D. Exemptions

The provisions of this rule shall not apply to the operation of stationary internal combustion engines used under the following conditions:

1. Engines rated at less than 50 brake horsepower.

2. Engines operated less than 200 hours per calendar year.

3. Emergency standby engines operated during either an emergency or maintenance operation. Maintenance operation is limited to 50 hours per calendar year.

4. Engines used in research or teaching programs.

5. Engines used directly and exclusively for agricultural operations necessary for the growing of crops or the raising of fowl or animals.

6. Engine test stands used for evaluating engine performance.

7. All engines rated at less than 100 horsepower, emitting NOx at not more than 5 gm/bhp-hr (shaft), and utilized as a qualified cogeneration facility permanently displacing the use of a specified boiler or boilers. This exemption shall apply to only those engines installed prior to December 31, 1988. A qualified cogeneration facility is one meeting the requirements of 18 CFR Part 292 Subpart B Section 292.205.

8. Diesel engines with a permitted capacity factor of 15 percent or less.

9. Diesel engines used to power cranes and welding equipment.

10. Diesel engines operated on San Nicolas island and Anacapa Island.

E. Recordkeeping Requirements

The operator of any engine subject to the provisions of Section B of this rule shall maintain an inspection log containing, at a minimum, the following data:

1. Identification and location of each engine subject to the provisions of this rule,

2. Date and results of each emission inspection,

3. A summary of any emissions corrective maintenance taken, and

4. Any additional information required in the Engine Operator Inspection Plan.

The operator shall maintain the inspection log for a period of 2 years after the date of each entry. The log shall be available for inspection by the District upon request.

F. Reporting Requirements

Prior to each permit renewal, each operator subject to the provisions of this rule shall provide the District with data specifying the actual annual usage (e.g., fuel consumption, actual operating hours) of each affected engine. The data shall also include the engine manufacturer, model number, operator identification number and location of each affected engine, a summary of the maintenance and testing reports required in Subsection C, and an annual source test report.

G. Test Methods

1. Oxides of nitrogen emissions for compliance source tests shall be determined by using ARB Method 100.

2. Carbon monoxide emissions for compliance source tests shall be determined by using ARB Method 100.

3. Reactive organic compound emissions for compliance source tests shall be determined by using EPA Method 25 or EPA Method 18, referenced to methane.

4. Oxygen content for compliance source tests shall be determined by using ARB Method 100.

5. Screening analyses shall be performed using a portable analyzer approved in writing by the APCO.

6. NOx emission limitations specified in Subsections B.1, B.2 and B.3 are expressed as nitrogen dioxide. All emission limitations are referenced at fifteen (15) percent volume stack gas oxygen measured on a dry basis. Source test data point intervals shall be no greater than 5 minutes and data points shall be averaged over 15 consecutive minutes.

7. The heating value of fuel oil shall be measured using ASTM Method D240-87. The heating value of gaseous fuel shall be measured using ASTM Method D1826-77.

8. Ammonia emissions shall be determined using Bay Area Air Quality Management District Method ST-1B, dated 1/20/82.

H. Violations

1. Failure to comply with any provision of this Rule shall constitute a violation of this rule.

2. It is the responsibility of the engine operator to demonstrate to the satisfaction of the Air Pollution Control Officer that an engine subject to the provisions of this rule is being operated in continuous compliance with all applicable provisions of this rule.

   An engine shall be in violation if it is operated out of compliance with the operating parameters of an approved Engine Operator Inspection Plan. However, if data from a source test of the engine operating under identical conditions indicates that the engine is in compliance with the requirements of this rule, then a violation will not have occurred. The source test shall be conducted at the engine operator's expense. The Engine Operator Inspection Plan may be amended to reflect the information from this source test.

I. Definitions

1. "Baseline Emission Rate": Emissions under normal operating conditions, prior to control, determined by a source test conducted in accordance with Section G.

2. "Diesel Engine": A compression ignited two or four-stroke engine in which liquid fuel injected into the combustion chamber ignites when the air charge has been compressed to a temperature sufficiently high for auto-ignition.

3. "Emergency Standby Engine": An internal combustion engine used only as follows:

   1) When normal power line or natural gas service fails.
   2) For the emergency pumping of water for either fire protection or flood relief.

   An emergency standby engine may not be operated to supplement a primary power source when the load capacity or rating of the primary power source has been either reached or exceeded.

4. "Engine Rating": The output of an engine as determined by the engine manufacturer and listed on the nameplate of the unit, regardless of any derating.

5. "Lean-burn Engine": Any two or four-stroke spark-ignited engine that is not a rich-burn engine.

6. "Maintenance Operation": The use of an emergency standby engine and fuel system during testing, repair and routine maintenance to verify its readiness for emergency standby use.

7. "Output": The shaft work output from an engine plus the energy reclaimed by any useful heat recovery system.

8. "Permitted Capacity Factor": The annual permitted fuel use divided by the manufacturers specified maximum hourly fuel consumption times 8760 hours per year.

9. "Rich-burn Engine": A two or four-stroke spark-ignited engine where the manufacturers original recommended operating air/fuel ratio divided by the stoichiometric air/fuel ratio is less than or equal to 1.1.

10. "Peak Load": Maximum instantaneous operating load.

11. "Stationary Internal Combustion Engine": Any internal combustion engine of the reciprocating type that is operated at a site for more than one year or is attached to a foundation.

12. "Stoichiometric Air/Fuel Ratio": The chemically correct air/fuel ratio where all fuel and all oxygen in the air/fuel mixture will be consumed.

13. "Waste Gas": Fuel gas produced at either waste water/sewage treatment facilities or landfills containing no more than 25 percent by volume supplemental gas.

J. Increments of Progress

1. Except as specified in Subsection J.2, all engines shall meet the requirements of either Subsection B.1 or B.2 and Subsection B.5 by January 1, 1997.

2. All existing engines with equipment installed to comply with the requirements of either Rule 74.9 or Rule 26 after September 5, 1989, shall meet the requirements of either Subsection B.1 or B.2 and Subsection B.5 by January 1, 2002. The installation date shall equal the issue date of the valid Permit to Operate for either the retrofit or the new equipment.

3. Engine operators not previously required to submit an Engine Operator Inspection Plan shall do so by July 1, 1994. Engine operators required to submit a modified Plan shall do so by July 1, 1994.

4. The owner or operator of a diesel engine shall submit a complete application for the Authority to Construct required to install any equipment necessary to comply with the requirements of either Subsection B.1 or B.2 of this rule on or before January 1, 1995, and shall award a contract for construction of the equipment on or before January 1, 1996.